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Cladosporium, *Phialophora*, *Pseudoramichloridium* & *Ticogloea* spp. nov. from China

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Abstract—Four new species from soil in China—*Cladosporium ningboense*, *Phialophora dimorphospora*, *Pseudoramichloridium xinjiangense*, and *Ticogloea elliptica*—are described, illustrated, and compared morphologically with similar species. The type specimens (dried cultures) and living cultures are deposited in the Herbarium of Shandong Agricultural University: Plant Pathology (HSAUP).

Key words—anamorphic fungi, morphology, taxonomy

Introduction

Four specimens collected during a survey of soil dematiaceous hyphomycete diversity in China, were found to represent undescribed species in *Cladosporium*, *Phialophora*, *Pseudoramichloridium*, and *Ticogloea.* The morphological characteristics of the fungi are described, illustrated, and compared with similar taxa. Specimens and living cultures are conserved in the Herbarium, Department of Plant Pathology, Shandong Agricultural University, Taian, China (HSAUP).

§ Y.L. Jiang and Y.M. Wu contributed equally to this work.

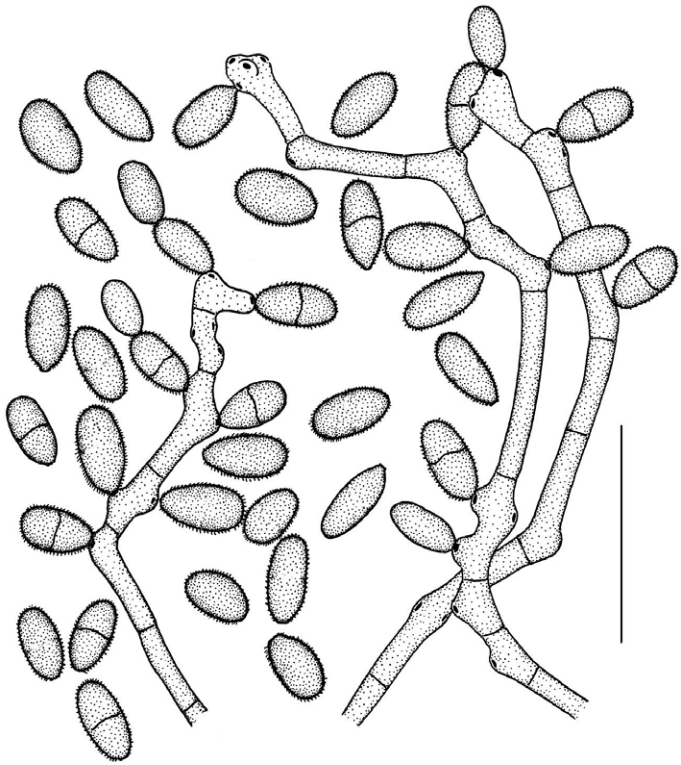

Fig. 1. *Cladosporium ningboense* (ex holotype, HSAUP II_{04}3120). Conidia and conidiophores. Scale bar = 25 μm.

Cladosporium ningboense J.J. Xu, Y.M. Wu & T.Y. Zhang, **sp. nov.** Fig. 1

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Differs from *Cladosporium allii* by its much smaller, ellipsoidal or broadly obovate conidia and from *C. qinghaiense* by its wider conidia.

Type: China, Zhejiang Province, Ningbo City, from soil of a vegetable plot, August 2004, J.J. Xu (**Holotype**, HSAUP II_{04}3120).

Etymology: in reference to the city where the specimen was collected.

Colonies on PDA effuse, velvety or powdery, dark brown or dark greenish brown, growing moderately, reaching a diameter of 3–5.5 cm in 2 weeks at 25 °C. Mycelium mostly superficial; hyphae brown, smooth, septate, branched, 2.5–6.5 μm diam. Conidiophores lateral or terminal, smooth, simple or occasionally branched, cylindrical, sympodial, geniculate and nodulose, <200 μm (sometimes longer), 6–11 μm diam. Conidia arising from terminal swellings of conidiophores, which later become intercalary, solitary or

sometimes catenate, ellipsoidal or broadly obovate, finely echinulate, rounded at the apex, tapered to the truncate base, pale brown to dark greenish brown, 0–1-septate, 10–20 × 6.5–12.5 μm, L/W = 1.5 ± 0.1.

Comments: In morphology of the sporogenous apparatus, *Cladosporium ningboense* is close to *C. allii* (Ellis & G. Martin) P.M. Kirk & J.G. Crompton and *C. qinghaiense* T. Zhang & Z.Y. Zhang. *Cladosporium allii* differs by its larger, cylindrical conidia with rounded ends (28–42× 12–16 μm; Kirk & Crompton 1984), and *C. qinghaiense* is distinguished by its narrower conidia (10.8–21.6 × 5.4–9.5 μm, L/W = 2 ± 0.1; Zhang et al. 1998, 2003).

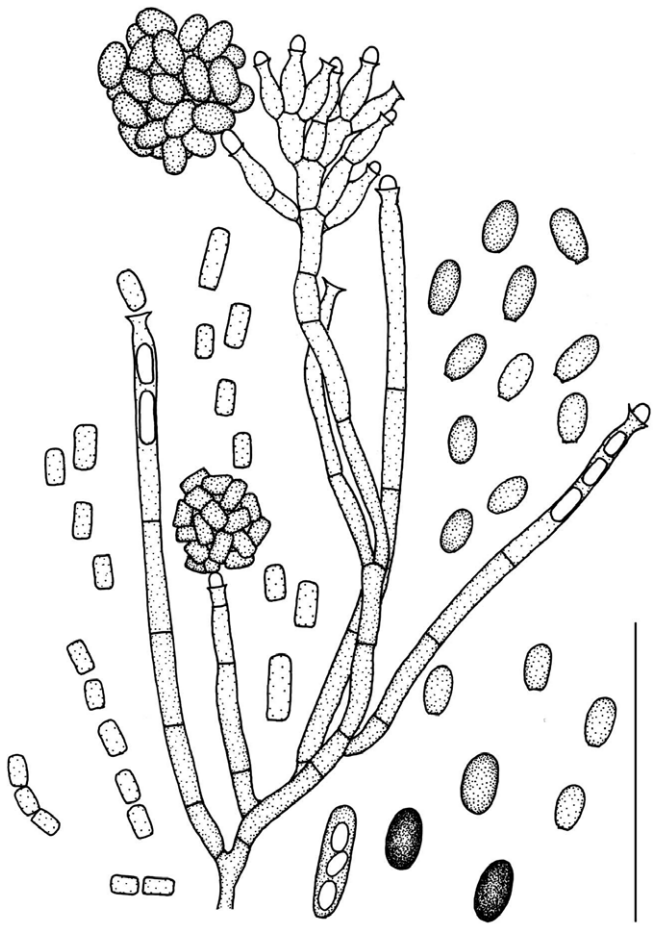

Fig. 2. *Phialophora dimorphospora* (ex holotype, HSAUP $II_{04}2548$). Conidia, conidiophores, and phialides. Scale bar = 25 μm.

Phialophora dimorphospora J.J. Xu & T.Y. Zhang, **sp. nov.** Fig. 2

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Differs from all other *Phialophora* species by its dimorphic phialides and conidia: (1) penicillately arranged, lageniform phialides producing ellipsoidal to cylindrical conidia with rounded ends; (2) single cylindrical phialides producing oblong conidia with truncated ends.

Type: China, Zhejiang Province, from montane soil of Yandang Mountains, August 2004, J.J. Xu (**Holotype**, HSAUP $II_{04}2548$).

Etymology: in reference to the dimorphic conidia.

Colonies on PDA effuse, velvety, pale brown at first then brown to blackish brown, reverse dark brown to black, slow-growing, reaching a diameter of 1.5–2 cm in 2 weeks at 25 °C. Mycelium mostly superficial; hyphae pale brown to brown, septate, 2–7.5 µm diam., often funiculose. Conidiophores unbranched or occasionally branched, smooth, pale brown to brown, septate, ≤62.5 µm long, 1.5–2.5 µm diam. Phialides and Conidia dimorphic: (1) lageniform terminal phialides arranged penicillately, with conspicuous collarettes, 3.5–7.5 × 1.5–3.5 µm, producing unicellular, ellipsoidal, narrowly ellipsoidal, or cylindrical conidia with rounded ends, or sometimes truncate at the base, pale to dark brown, 4.5–9.5 × 2–3.5 µm, often accumulating at the apex of the phialides in a slimy head; (2) solitary, long cylindrical phialides, pale brown to brown, with deep cupulate collarettes, producing oblong conidia with truncate ends, hyaline to subhyaline, 1.5–6 × 1–2 µm, often accumulating at the apex of the phialides in a slimy head.

Pseudoramichloridium xinjiangense T.Y. Zhang & J.H. Kong, **sp. nov.** Fig. 3

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Differs from *Pseudoramichloridium henryi* by its longer conidiophores and larger conidia.

Type: China, Xinjiang Uygur Autonomous Region, Aksu, from soil of a park, July 2005, J.H. Kong (**Holotype**, HSAUP II_{052570}).

Etymology: in reference to the region where the specimen was collected.

Colonies on PDA effuse, greyish brown, velvety, growing slow. Mycelium partly superficial, partly immersed; hyphae branched, septate, hyaline to pale brown, smooth, 1.5–2.5 µm diam. Conidiophores macronematous, cylindrical, straight or slightly flexuous, unbranched, brown, smooth, mostly 100–200 µm long (sometimes up to 375 µm long or more), 2.5–3.5 µm diam. Conidiogenous cells terminal or intercalary, subhyaline to pale brown, paler towards the apex, cylindrical, sympodial, 23–74 × 3–4 µm, conidial scars denticulate. Conidia unicellular, narrowly obovate to ellipsoidal, rounded

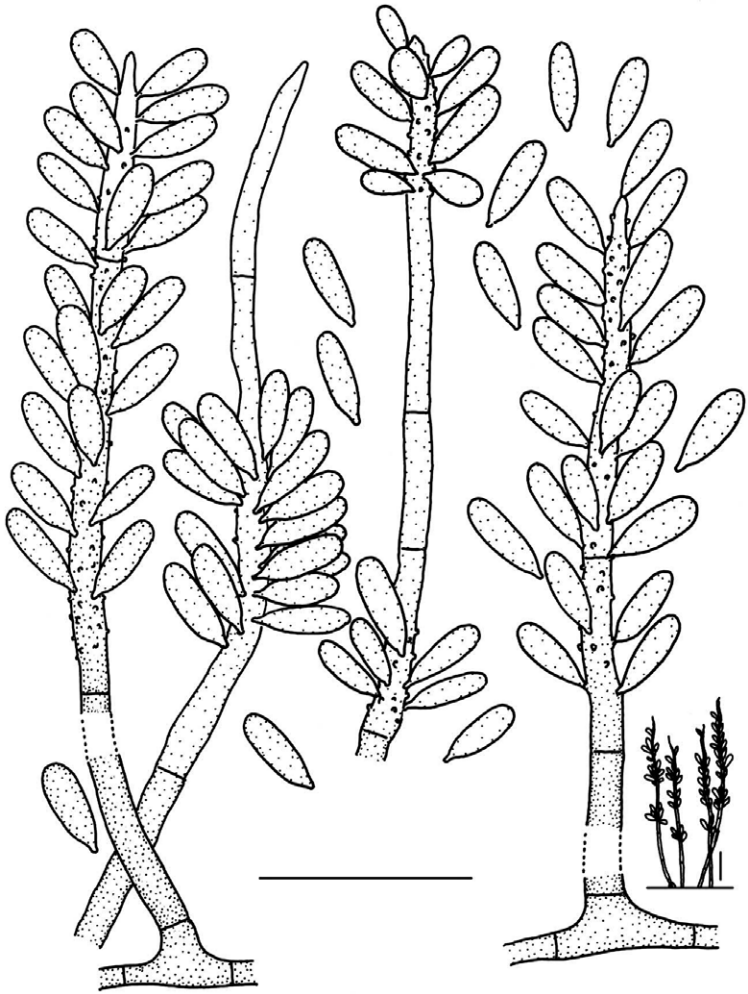

Fig. 3. *Pseudoramichloridium xinjiangense* (ex holotype, HSAUP II_{05}2570). Conidia, conidiophores, conidiogenous cells, and denticles. Scale bars = 25 μm.

or obtuse at the apex, tapering towards the truncate base, subhyaline to pale brown, smooth, 7–14.5 × 3–4 μm.

Comments: *Pseudoramichloridium xinjiangense* somewhat resembles *P. henryi* Cheew. & Crous, which differs by its shorter conidiophores (<90 μm long) and smaller conidia (6–8 × 2.5–3 μm; Cheewangkoon et al. 2009).

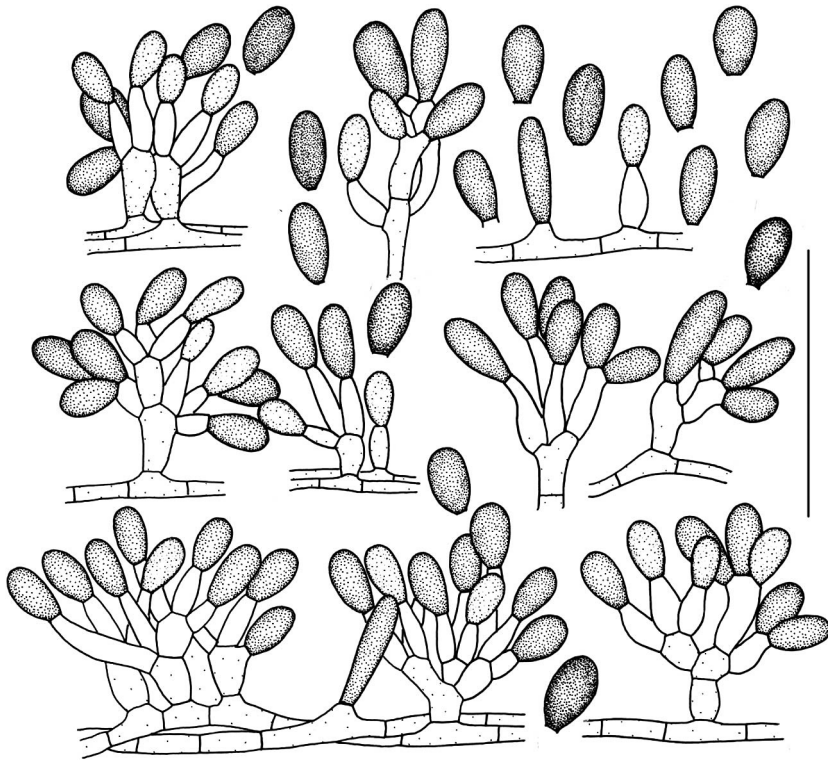

Fig. 4. *Ticogloea elliptica* (ex holotype, HSAUP $II_{04}2817$).
Conidia, conidiophores, and conidiogenous cells. Scale bar = 25 μm.

Ticogloea elliptica T.Y. Zhang, Y.M. Wu & J.J. Xu, **sp. nov.** Fig. 4

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Differs from *Ticogloea guttulata* by its bigger, ellipsoidal or obovate, smooth conidia.

Type: China, Zhejiang Province, Hangzhou City, from shore soil of West Lake, August 2004, J.J. Xu (**Holotype**, HSAUP $II_{04}2817$).

Etymology: in reference to the shape of the conidia.

Colonies on PDA effuse, at first greyish white, then gradually becoming grey to dark grey, slightly darker and raised in the middle, velvety or cottony, reverse pale grey to dark greyish brown, growing slow, reaching a diameter of 3–5 cm in 2 weeks at 25 °C. Mycelium partly superficial, partly immersed; hyphae hyaline to subhyaline, septate, branched, smooth, 2–3 μm wide. Conidiophores lateral, septate, branched, hyaline to subhyaline, smooth,

2–19 × 2.5–3.5 µm. Conidiogenous cells cylindrical or subulate, sympodial. Conidia holoblastic, solitary, acropleurogenous, aseptate, ellipsoidal or obovate, smooth, initially hyaline or pale, dark brown when mature, rounded at the apex, slightly truncate at the base, 5–9.5 × 3–5.5 µm.

Comments: There is only one previously described *Ticogloea* species, *T. guttulata* G. Weber et al., which differs from *T. elliptica* by its smaller conidia (3.8–5.0 × 2.7–3.5 µm; Halmschlager & Kowalski 2000) that are guttulate and sometimes roughened (Seifert et al. 2011).

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